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2. The peculiar and definite organs at the base are sense organs, and are necessary in giving the halteres functional value.

3. These sense organs are in some way aroused by the changes in position, and thru them the central nervous system is enabled to control the process of balancing.

A CONVENIENT DROPPER FOR USE IN CUTTING CELLOIDIN SECTIONS

A very useful aid in cutting celloidin sections is shown in the accompanying figure (Plate II). This piece of apparatus was in stock when the writer assumed charge of this laboratory, and he is not acquainted with its history. While it is not listed in any of the dealers' catalogs that the writer has examined, it may be made at a very slight cost in any machine shop.

It consists of a glass oil-cup (1) of about 40 cc. capacity, with a mill-head (2) at the top to regulate the flow of alcohol. The cup is fastened to a bar (3), which is slotted for about $\frac{3}{4}$ its length to receive the bolt that extends through the column (4) that holds the cup a few inches above the knife (5). The head of the bolt mentioned above is of the proper shape to fit into the slot in the knife-carrier, and the thumb-nut (6) on the other end of the bolt tightens at one time both the bar (3) to the column (4) and the column to the knife carrier. This thumb-nut and its bolt, which, except in length, are exactly those (7) that hold the knife in position, make it possible instantly to adjust the cup so that the alcohol will fall on any desired part of the knife; and since the apparatus is attached to the carrier it will always be over the same part of the knife even in microtomes where it is the knife that moves. If all the metal parts are nickel-plated it will obviate trouble in drying off the alcohol to prevent rusting.

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CRITICAL ILLUMINATION FOR THE MICROSCOPE

In a brief paper (J. Queck. Micr. Club. Nov. 1912) Reid gives some important suggestions for critical illumination, which will certainly be of value to beginners in the use of the microscope and to many older users who have not given critical attention to the sub-

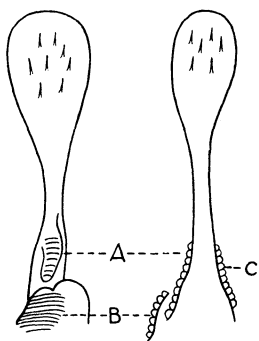


Fig. 1

Fig. 2

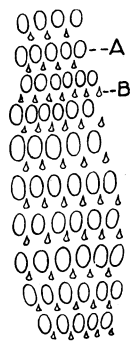


Fig. 3

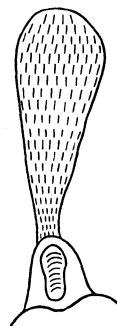


Fig. 6

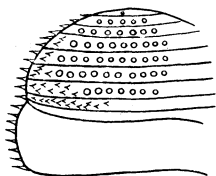


Fig. 4

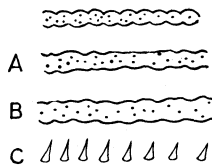


Fig. 5

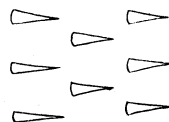


Fig. 7

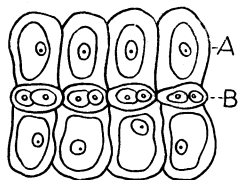


Fig. 8

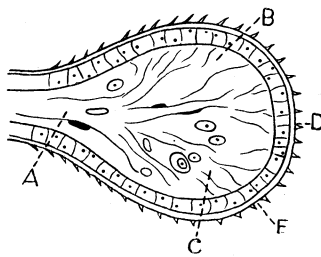


Fig. 9

PLATE I
Sense Organs of Diptera

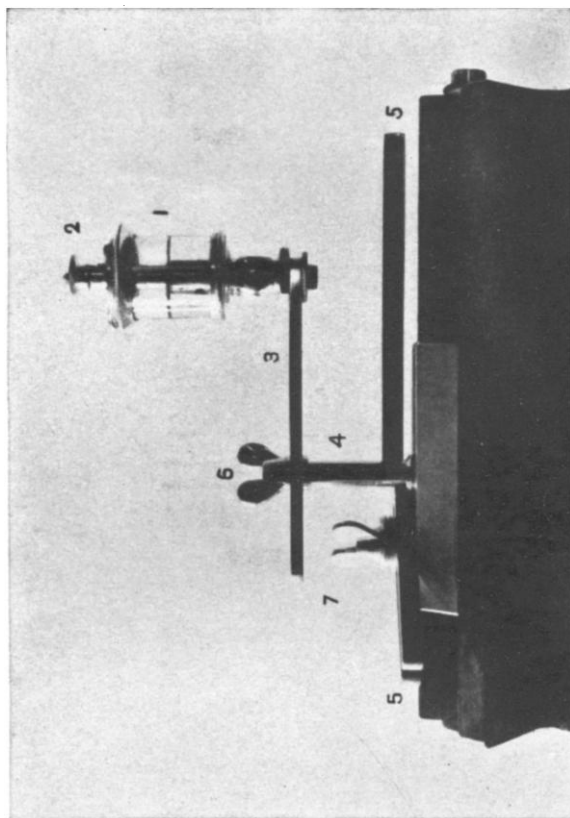


PLATE II
Dropper for Celloidin Sectioning

ject. There is little question that most of us, reared in school laboratories, do not get the nice, exact results in the use of microscopes which are obtained by the thoroging students of microscopy.

Certain simple precautions leading to good illumination introduce the paper:—Cut out all unnecessary light from the room, so that no light gets to the eye except thru the microscope; save the best eye for critical moments by using the other eye for preliminary steps; use color screens complementary to the stains used, green for red, yellow for blue, etc. The subject of illumination itself the author discusses under these heads: The most suitable light; collecting lenses; principles of correct illumination both of the field and of the object itself; condensers; distance of lamp from substage mirror; critical and non-critical illumination; working aperture; general arrangement of light and apparatus in high, medium, and low-power work.

For the detailed discussion of these topics the readers must be referred to the original paper.

CLEANING DIATOMS

Blake (*Am. Jour. Sci.* Jan. 1913) calls attention to the interest in cleaning, mounting, and study of diatoms. After recounting the difficulties attendant on the usual methods he describes a method originated by himself some twenty years ago.

Instead of the older method of treating with acid, diluting with water, and repeated decanting, the author devises an organic seive made by cementing a thin cross-section of some coniferous wood to a small glass vial whose bottom has been cut off for the purpose. The wood is cut about one-quarter millimeter in thickness, from a suitable piece of wood kept until the operation in boiling water. This is done by means of a sharp, thin-edged chisel.

The operation of cleaning the diatoms consists of placing the digested diatom material, moderately diluted, in the vial, and by means of a suitable rubber compression bulb, alternately pressed and released, of forcing the acids and salts thru the seive, and the clay and fine sand thru or into its pores. These diatoms which are longer than the diameter of the pores will remain behind with larger grains of sand which must be removed in some other way.